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Agricultural Transportation Challenges for the 21st Century

Long-term Capacity Constraints in the U.S. Rail System

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Issue

Prior to the *Staggers Rail Act of 1980*, railroads were viewed as having too much capacity — too many lines, too many cars, too many locomotives, and too many employees. After two decades of “down-sizing,” the western railroad crisis of 1997-98 and the expansion of the U.S. economy throughout the 1990's have prompted concerns that U.S. railroads may be approaching the effective limit of their productive capacity on many key rail segments and yard facilities. That is, without undertaking expensive investments, railroads may not be able to handle future increases in traffic. If U.S. railroads have limited capacity and must ration traffic, service priorities given to different classes of traffic are certain to become an issue with agricultural shippers, as they did during the western railroad crisis. Because rail is the only viable shipping alternative for many agricultural shippers, rail capacity limitations would likely result in higher rates and lesser levels of service relative to other classes of traffic and those movements on which railroads face greater competitive pressures.

Background

Overcapacity has long plagued the railroad industry. In the 20 years following the Civil War, the nation's railway network nearly tripled in length. This feverish pace of expansion eventually resulted in a rail network of over 250,000 miles of road in 1915. Today, the comparable figure is just over 147,000 miles of road. In fact, the U.S. railway network was overbuilt almost from the beginning. During the 1870's and 1880's, when railroads were not attempting to create a sustainable cartel, the excess capacity in the system ensured periods of vigorous, even destructive, competition among railroads.

Given the large fixed costs railroads incur, it seems strange that the problem of overcapacity could not have been solved within a decade or two. In fact, railway overcapacity persisted for nearly a century. However, two forces kept the railroad industry from successfully rationalizing its network; technological change and Government regulation.

Technological change in the form of the automobile and improved roads greatly reduced the cost of transporting goods short distances. As the truck displaced the draft horse as the means to haul grain off the farm, the extensive railway network in many farm States could no longer be

sustained. In some cases, keeping parallel light-density branch lines in service drained resources that could have been better invested in modernizing main lines and locomotive fleets. Similarly, the rise of the automobile and commercial bussing companies and airlines siphoned off passenger traffic from railroads.

Government regulation also played a role in preventing railroads from rationalizing their network. As common carriers, railroads are required to provide transportation or service on reasonable request. To ensure that this obligation was fulfilled, law and regulation made it nearly impossible for railroads to abandon or discontinue service on a line. Railroads were even forced to maintain passenger service at enormous expense long after it was obvious that few passengers wished to travel by rail.

Freed by the *Staggers Act* and favorable labor agreements to rationalize their systems, railroads began to cut costs aggressively in the 1980's. Employment in the industry fell from 532,000 in 1980 to 256,000 in 1996. Similarly, rail mileage fell from 179,000 miles of road in 1980 to 147,210 in 1996. Over the same time period, the number of freight cars fell from 1.7 million to 1.2 million and the number of locomotives dropped from 28,094 to 19,269 units.

Even though their miles of track and number of employees, cars, and locomotives decreased after deregulation, railroad output has increased. Measured by carloads originated, output increased from 22.2 million carloads in 1980 to 24.2 million in 1996. In addition, shipments of intermodal containers and trailers increased from 3.1 million to 8.2 million over the same time period. Measured in terms of revenue ton-miles, the growth has been even more impressive. In 1980, railroads handled 919 billion ton-miles of traffic. By 1996, that number had increased to 1,356 billion ton-miles of traffic. U.S. railroads have been able to move this increased volume of freight by handling larger shipments over a longer distance at a much greater velocity.

These numbers demonstrate that railroad productivity has increased since deregulation. Because they have been able to move more freight with lower levels of inputs, railroads have been able to cut their costs significantly. On a revenue-per-ton-mile basis, average rates have also fallen as railroads have been able to greatly increase their shipment size and the average distance of their shipments. Better maintenance of track and equipment has improved the quality of rail service on the smaller rail network by reducing loss and damage claims.

However, the recent rail congestion problems suggest that U.S. railroads may have reached the practical limit of their possible productivity increases without major expansion in the capacity of their basic infrastructure. Increasing the volume of freight movements on a fixed network by handling larger shipments over a longer distance at greater velocities cannot be continued indefinitely. Indeed, one of the lessons of the western railroad crisis is the sensitivity of current railroad operations and the productivity of major sections of the U.S. rail system to even a slight downturn in the velocity of the system. Shocks that not so long ago could be easily handled locally, now can disrupt rail service in regions far removed from the site of the original disturbance. With productivity of the U.S. rail system so dependent upon throughput, and future improvements in the system velocity looking doubtful, the smooth flow of interstate commerce is extremely dependent on the capacity available in railroad main lines and switching yards.

Implications

The existence of long-term capacity constraints in the U.S. rail system would clearly have significant short-term implications for agricultural shippers. For example, capacity problems would suggest that, to get the most of their current infrastructure, western railroads will promote 100-car “unit-train” shipping even more aggressively in the future. Additionally, past railroad policies that allowed, and even encouraged, coloads among smaller agricultural shippers, will now be discouraged — with rail capacity at a premium, railroads will not want to allow “stop-and-go” local traffic to tie up high-density traffic lanes. Capacity constraints may suggest that railroads will ration scarce rail capacity using pricing programs like BNSF’s Certificates of Transportation (COTS). Smaller, non-COTS agricultural shippers might receive lesser levels of service if railroads give preference to those agricultural shippers that can originate trainload-size shipments at frequent intervals. From a broader perspective, the existence of rail capacity limitations may also suggest that a higher service priority will be given to higher value shipments of manufactured traffic at the expense of agricultural shippers, as was seen during the western rail crisis.

The long-term implications for U.S. agriculture from rail capacity problems would be equally significant. According to a recent USDA study, railroads are no longer the dominant mode of transportation for U.S. grain; in fact, the market share controlled by railroads has been declining for years. Faced with capacity constraints, railroads are certain to be even less interested in moving smaller shipments relatively short distances to domestic processing locations as opposed to moving large shipments long distances to export. Consequently, the existence of rail capacity constraints would suggest a decreasing role for railroads to serve all types of domestic processing. Processors and feeders will continue to locate their operations closer to the source of raw materials. Farmers may switch to crops less dependent on rail transportation. Finally, limitations in rail capacity, and any associated increase in railroad rates, would make it more difficult for U.S. agricultural producers to compete in international markets and lessen any comparative advantage U.S. producers have had over international competitors arising from efficiencies in transportation and logistics.

If rail capacity constraints are a problem then the available capacity will be rationed either by higher rates, poorer service, or both. Of course, railroads will likely find it profitable to make additional investments in capacity, in fact some capacity-expansions are already underway. However, it must be recognized that railroads compete with other industries to obtain funds in the capital markets. Investments in track modernization, advanced signaling devices, global positioning systems, yard capacity, etc., will have to be paid for and it seems likely that those shippers most dependent on rail service will pay the greater share.

Information Sources

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